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December 18, 1998

Mr. Jerry Lyle
Office of Program Execution
DOE Idaho Operations Office
P.O. Box 2047
Idaho Falls, ID 83403-9901

Via Federal Express

Re: Comments on Proposed Clean-up Plan for INEEL Chemical Processing Plant

Dear Mr. Lyle:

Thank you for the opportunity to review and comment on the Proposed Plan for Waste Area Group 3 at the INEEL Chemical Processing Plant ("Chem Plant"). I commend the Department for involving Idaho's citizens in this important process, and encourage each participating agency to carefully weigh the public's input before final remedy selection.

By way of introduction, I serve on the Department's Yucca Mountain Technical Advisory Committee where I offer advice on the nation's program to develop a permanent geologic repository for high-level radioactive waste. I am also Chairman and CEO of American Ecology Corporation, the nation's oldest and most experienced provider of commercial low-level radioactive waste ("LLRW") disposal services. American Ecology is also, through its experience in California, the only entity to receive a license for disposal of LLRW Classes A, B and C since promulgation of the Nuclear Regulatory Commission's 10 CFR Part 61 regulations. I am a native of Couer d'Alene, a University of Idaho alumnus, and a long-time Boise resident.

While the Proposed Plan identifies sound solutions for significant portions of the Chem Plant clean-up challenge, it misses the mark in its recommendation to build a large new disposal facility over the Snake River Plain Aquifer. I question key assumptions and analyses cited in favor of the proposed INEEL CERCLA Disposal Facility, and believe "off-aquifer" disposal alternatives both within and outside INEEL's boundaries have not received sufficient study. I also question that the proposed 100 year Remedial Action Objective will adequately protect the future value of regional groundwater resources and the economic activities they support.

The Proposed Plan to concentrate waste over an already contaminated portion of this environmentally vulnerable, economically vital "sole source" aquifer is compounded by the Department's actions to accelerate waste receipt at the existing Radioactive Waste

Management Complex Subsurface Disposal Area.¹ Moreover, tremendous pressure would exist to bury other, heterogeneous wastes at the new facility after it was built. The cumulative effect of these factors merits analysis. My specific comments follow.

Snake River Plain Aquifer Protection

1. Given the value of the Snake River Plain Aquifer, the lack of natural protection offered by in situ soils and hydrologic conditions and the dangers of relying on man-made engineered systems for waste isolation, the proposed Chem Plant on-site disposal facility is environmentally unsuitable.

In a recent hazardous waste facility siting guidance document, “EPA recommends NOT (emphasis original) *siting hazardous waste facilities in sensitive locations...*” and recommends avoidance of what the agency terms “*High-Value Groundwater*” because “*Contaminants are transported quickly. Cleanup is costly and difficult.*” EPA’s definition of high-value groundwater includes cases where it is “*the sole source of drinking water available.*” EPA further explains that “*Removing contamination from groundwater may take hundreds of years.*”² Joint EPA-Nuclear Regulatory Commission siting guidelines for mixed waste disposal state that “*Hydrogeology is considered vulnerable when ground-water travel time along any 100-foot flow path from the edge of engineered containment structure is less than approximately 100 years.*”³

These conditions clearly apply at the Chem Plant. The underlying eastern Snake River Plain aquifer, formally designated a sole source aquifer by EPA in 1991, provides all water used at the site and is an important economic resource for southeastern and south-central Idaho. More than 3,000 people draw water from wells located within a 3-mile radius of the site.⁴ According to the Plan, regional groundwater flow velocities average 5 ft./day, and generally flows even more rapidly beneath the Chem Plant.

As the Proposed Plan also notes, portions of the aquifer are now sufficiently contaminated that the preferred alternative would not meet Idaho groundwater quality standards for roughly 100 years. The Plan concludes that pumping and treating this groundwater and the contaminated perched water zones above it would be challenging and expensive. These corrective action limitations are a compelling site suitability constraint.

Further support for deciding against a new disposal site at the Chem Plant is found in the NRC’s 10 CFR Part 61 regulations for land disposal of radioactive waste, which should be included with other Applicable or Relevant and Appropriate Requirements

¹ “Waste Management Program Strategic Plan”, DOE/ID-10429, Rev. 3, December 1997.

² “Sensitive Environments and the Siting of Hazardous Waste Management Facilities” (EPA/530-K-97-003) May 1997.

³ “Combined NRC-EPA siting guidelines for disposal of commercial Mixed Low-Level Radioactive and Hazardous Wastes”, March 1987.

⁴ EPA National Priorities List factsheet - Idaho National Engineering Laboratory (1000305n.htm)

("ARARs").⁵ Under Part 61, *"The primary emphasis in disposal site suitability is given to isolation of wastes, a matter having long-term impacts, and to disposal site features that the long-term performance objectives of Subpart C of this part are met, as opposed to short-term convenience or benefits."*⁶ This same primary emphasis appears in the joint NRC-EPA siting guidelines.⁷ NRC's regulations go on to note that *"The disposal site must be designed to complement and improve, where appropriate, the ability of the site's natural characteristics to assure that the performance objectives of Subpart C of this part will be met."*⁸

The porous, coarse grained soil deposits and shallow, permeable bedrock beneath the Chem Plant offer limited ability to attenuate contaminants and impede downward moisture infiltration. Under these unfavorable natural conditions, the man-made liner system envisioned for the proposed disposal site would offer the only waste isolation barrier. Failure to successfully join the multiple panels comprising the liners, heavy equipment damage, degradation of liner materials by waste constituents or the simple passage of time could lead to unforeseen releases. Once in the fractured basalt, contaminant dispersion monitoring and corrective action would be difficult and expensive.

Unforeseen releases would also increase waste constituent concentrations in an area exceeding drinking water standards and experiencing further adverse effects from overlying perched water zones. As noted in the Plan, contaminants in the perched water are a significant source of aquifer contamination. Beyond threatening the 100 year groundwater quality attainment objective, this circumstance may conflict with the NRC site suitability requirement that "The disposal facility must not be located where nearby facilities could ...significantly mask the environmental monitoring program."⁹

2. The Snake River Plain aquifer has tremendous economic value, which should be conservatively managed for future uses.

In addition to serving drinking water needs, the Snake River Plain aquifer provides vast quantities of water for Idaho agriculture. The already substantial value of this natural asset will only increase with time. A glimpse of what the future may hold is offered by an arrangement developed by the Metropolitan Water District of Southern California (one of the nation's most sophisticated water users) to pump and market groundwater from lower-yielding aquifers in the Mojave Desert. While Idaho water economics are different from those in California, competing demands on Idaho and other western water sources will certainly intensify over the proposed 100 year clean-up timeframe.

The Plan's conclusion that treatment of contaminated groundwater is not cost-effective should be tested against future water value projections. At a minimum, a "belt and

⁵ The Plan indicates that RCRA Subtitle C requirements are the same regulations applied to commercial disposal facilities. These regulations do not apply to commercial radioactive waste.

⁶ Title 10, Code of Federal Regulations, Part 61.50(a), Federal Register, Vol. 47 No. 248.

⁷ NRC-EPA siting guidelines (see above).

⁸ 10 CFR Part 61.51(a)(4)

⁹ 10 CFR Part 61.50(a)(11).

suspenders" approach should be taken to ensure that the 100 year groundwater quality attainment objective is met. Prudent steps include elimination of concentrated waste disposal above contaminated portions of the aquifer, and (as the Plan recommends) discontinuing use of the two unlined Chem Plant's wastewater percolation ponds.

In reality, the long-term economic value of the Snake River Plain aquifer resource will depend on public perception as much as objective scientific data. The inevitable public scrutiny a new, over-aquifer disposal project invites would, in itself, influence public perceptions and potentially create adverse economic effects. There is little doubt that unexpected future releases to the aquifer would cause adverse economic effects. Under such circumstances, government assurances that radionuclide concentrations were within regulatory limits and/or far distant from agricultural water users would not likely restore damaged consumer confidence.

I offer this last comment based on my professional experience observing the diminished influence of science in our society, public mistrust of government handling of radiation safety issues, and the information revolution which has forever ended the days when programs such as this could be implemented with little public attention. It is essential that the Department work within this decision environment, and undertake environmental restoration actions based on permanent solutions which will stand the tests of time and scrutiny. I believe the proposed approach to Snake River Plain Aquifer protection falls short of this standard.

3. If this disposal facility is built, radioactive, mixed and toxic wastes would likely be directed there not only from INEEL but DOE facilities in other states as well. This concern is bolstered by my understanding that DOE is actively considering a regionalized disposal system, using two or three federal sites to be selected from a short list that includes INEEL. The contemplated disposal site would be very large, covering 54 acres with a capacity of more than 13 million cubic feet of waste. (By comparison, the eleven western states using the Richland, Washington commercial low-level radioactive waste disposal facility now ship about 100,000 cubic feet of waste per year).

Under the Plan's off-site disposal alternative, only about 2.2 million cubic feet of generally homogeneous soil wastes would require burial. Leveraging this much smaller burial need to justify building 13 million cubic feet of disposal capacity for an unspecified mix of heterogeneous wastes from multiple locations is particularly imprudent, given the high value groundwater resource placed at risk.

Aquifer Protection Recommendations:


- Reject the currently preferred alternative of building a new disposal facility at the Chem Plant or other location overlying the Snake River Plain aquifer. A commercial radioactive waste disposal facility could not be licensed here, and the government should not adopt a lower standard for protection of this vulnerable, high-value natural resource. If necessary, excavated wastes can be stored pending identification of a permanent sound solution.

- Determine whether a technically suitable disposal location exists at the INEEL that is not underlain by the aquifer. If a suitable area exists, conduct health and environmental risk assessments and otherwise develop and evaluate this alternative on-site strategy.
- Refine off-site waste disposal cost estimates based on input requested from the various commercial disposal service providers. Respondents should be provided with updated volume and waste type projections for all INEEL waste streams reasonably likely to require disposal, and be asked to identify closure, post-closure care, general and administrative overhead and other fees included in their estimates.
- Verify that full life-cycle costs (including closure, post-closure care and monitoring, general and administrative expenses, etc.) are included in cost estimates for on-site DOE disposal. This will allow meaningful comparison with "fully loaded" off-site disposal costs. To further promote "apples to apples" comparisons, costs for the Chem Plant disposal alternative should explicitly present the cost of an on-site facility sized to handle the same 83,000 cubic yards of waste analyzed for off-site burial. I believe that these analytical refinements will reveal a much smaller differential between on-site and off-site disposal costs.
- Adopt a comprehensive, INEEL-wide policy of minimizing further burial of radioactive and mixed wastes over the Snake River Plain aquifer, and pursue alternatives to the accelerated use and full utilization of remaining RWMC Subsurface Disposal Area burial capacity.

My comments are offered in the spirit of protecting Idaho's natural heritage for the future generations that will assume our stewardship responsibilities. I understand the magnitude of the challenge facing the Department, and hope that my input proves useful. Please send a copy of the Chem Plant Record of Decision and Responsiveness Summary to the above address. In the meantime, feel free to contact me if I can be of assistance.

Sincerely,


J.K. Lemley

cc: Dean Nygard, Idaho Division of Environmental Quality
 Wayne Pierre, EPA Region X